

**Amendment and Response Under 37 C.F.R. §1.116 - Expedited Examining Procedure**

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Serial No.: 10/663,926

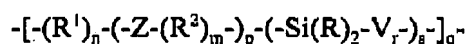
Confirmation No.: 2299

Filed: September 16, 2003

**For: COMPOUNDS CONTAINING QUATERNARY CARBONS AND SILICON-CONTAINING GROUPS,  
MEDICAL DEVICES, AND METHODS****Amendments to the Claims**

This listing of claims replaces all prior versions, and listings, of claims in the above-identified application:

1. (Currently Amended) A medical device comprising a segmented polymer comprising a soft segment comprising a group of the formula:



wherein:

n = 0 or 1;

m = 0 or 1;

p = 1-100,000;

r = 0-100,000;

s = 1-100,000;

q = 1-100,000;

R<sup>1</sup> and R<sup>2</sup> are each independently a saturated or unsaturated aliphatic group, an aromatic group, or combinations thereof; ~~optionally including heteroatoms;~~

Z is -C(R<sup>3</sup>)<sub>2</sub>- wherein each R<sup>3</sup> is independently a saturated or unsaturated aliphatic group, an aromatic group, or combinations thereof; ~~optionally including heteroatoms,~~ wherein the two R<sup>3</sup> groups within -C(R<sup>3</sup>)<sub>2</sub>- can be optionally joined to form a ring;

each R is independently a saturated or unsaturated aliphatic group, an aromatic group, or combinations thereof; ~~optionally including heteroatoms;~~ and

V is [[-O-Si(R)<sub>2</sub>- or]] R<sup>1</sup>;

with the proviso that the polymer is [[substantially]] free of carbonate linkages.

2. (Original) The medical device of claim 1 wherein p = 1-5000.

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3. (Original) The medical device of claim 2 wherein  $p = 2-12$ .
4. (Original) The medical device of claim 1 wherein  $R^1$  and  $R^2$  are each independently a straight chain alkylene group, an arylene group, or combinations thereof.
5. (Original) The medical device of claim 4 wherein  $R^1$  and  $R^2$  are each independently a straight chain alkylene group.
6. (Original) The medical device of claim 1 wherein  $R^1$  and  $R^2$  are each independently groups containing up to 100 carbon atoms.
7. (Original) The medical device of claim 6 wherein  $R^1$  and  $R^2$  are each independently groups containing up to 20 carbon atoms.
8. (Original) The medical device of claim 7 wherein  $R^1$  and  $R^2$  are each independently groups containing 2 to 20 carbon atoms.
9. (Currently Amended) The medical device of claim 1 wherein each  $R^3$  is independently a straight chain alkyl group, an aryl group, or combinations thereof; ~~optionally including~~ heteroatoms.
10. (Currently Amended) The medical device of claim 9 wherein each  $R^3$  is independently a straight chain alkyl group; ~~optionally including~~ heteroatoms.
11. (Original) The medical device of claim 10 wherein each  $R^3$  is independently a straight chain alkyl group containing 1 to 20 carbon atoms.

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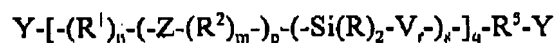
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12. (Original) The medical device of claim 1 wherein the polymer further comprises a urethane group, a urea group, or combinations thereof.
13. (Original) The medical device of claim 12 wherein the polymer comprises a segmented polyurethane.
14. (Original) The medical device of claim 1 wherein the polymer is a biomaterial.
15. (Currently Amended) The medical device of claim 14 wherein the polymer is [[substantially]] free of ether, ester, and carbonate linkages.
16. (Original) The medical device of claim 1 wherein the polymer is linear, branched, or crosslinked.
17. (Currently Amended) A medical device comprising a segmented polymer comprising a soft segment prepared from a compound of the formula:



wherein:

each Y is independently OH or NR<sup>4</sup>H;

n = 0 or 1;

m = 0 or 1;

p = 1-100,000;

r = 0-100,000;

s = 1-100,000;

q = 1-100,000;

R<sup>1</sup>, R<sup>2</sup>, and R<sup>3</sup> are each independently a saturated or unsaturated aliphatic group, an aromatic group, or combinations thereof; optionally including heteroatoms;

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Z is  $-C(R^3)_2-$  wherein each  $R^3$  is independently a saturated or unsaturated aliphatic group, an aromatic group, or combinations thereof; ~~optionally including heteroatoms,~~  
wherein the two  $R^3$  groups within  $-C(R^3)_2-$  can be optionally joined to form a ring;  
each R is independently a saturated or unsaturated aliphatic group, an aromatic group, or combinations thereof; ~~optionally including heteroatoms;~~  
each  $R^4$  is independently H or a saturated or unsaturated aliphatic group, an aromatic group, or combinations thereof; and  
V is  $[-O-Si(R)_2- \text{ or } ] R^1$ ;  
with the proviso that the polymer is  $[[\text{substantially}]]$  free of carbonate linkages.

18. (Original) The medical device of claim 17 wherein  $p = 1-100$ .
19. (Original) The medical device of claim 18 wherein  $p = 2-12$ .
20. (Original) The medical device of claim 17 wherein the number average molecular weight of the compound of the formula  $Y-[-(R^1)_n-(-Z-(R^2)_m-)_p-(-Si(R)_2-V_r-)_q-R^5-Y]$  is no greater than about 100,000 grams/mole.
21. (Original) The medical device of claim 20 wherein the number average molecular weight of the compound of the formula  $Y-[-(R^1)_n-(-Z-(R^2)_m-)_p-(-Si(R)_2-V_r-)_q-R^5-Y]$  is about 1000 grams/mole to about 1500 grams/mole.
22. (Original) The medical device of claim 17 wherein  $R^1$  and  $R^2$  are each independently a straight chain alkylene group, an arylene group, or combinations thereof.
23. (Original) The medical device of claim 22 wherein  $R^1$  and  $R^2$  are each independently a straight chain alkylene group.

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24. (Original) The medical device of claim 17 wherein  $R^1$  and  $R^2$  are each independently groups containing up to 100 carbon atoms.
25. (Original) The medical device of claim 24 wherein  $R^1$  and  $R^2$  are each independently groups containing up to 20 carbon atoms.
26. (Original) The medical device of claim 25 wherein  $R^1$  and  $R^2$  are each independently groups containing 2 to 20 carbon atoms.
27. (Original) The medical device of claim 17 wherein each  $R^2$  includes at least two carbon atoms.
28. (Currently Amended) The medical device of claim 17 wherein each  $R^3$  is independently a straight chain alkyl group, an aryl group, or combinations thereof, ~~optionally including heteroatoms.~~
29. (Currently Amended) The medical device of claim 28 wherein each  $R^3$  is independently a straight chain alkyl group, ~~optionally including heteroatoms.~~
30. (Original) The medical device of claim 29 wherein each  $R^3$  is independently a straight chain alkyl group containing 1 to 20 carbon atoms.
31. (Original) The medical device of claim 17 wherein the polymer further comprises a urethane group, a urea group, or combinations thereof.
32. (Original) The medical device of claim 31 wherein the polymer comprises a segmented polyurethane.

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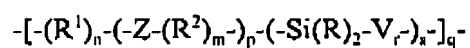
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33. (Original) The medical device of claim 17 wherein the polymer is a biomaterial.
34. (Currently Amended) The medical device of claim 33 wherein the polymer is [[substantially]] free of ether, ester, and carbonate linkages.
35. (Original) The medical device of claim 17 wherein each Y is OH.
36. (Original) The medical device of claim 17 wherein each R<sup>4</sup> is independently H or a straight chain alkyl group.
37. (Original) The medical device of claim 36 wherein each R<sup>4</sup> is independently a straight chain alkyl group containing 1 to 20 carbon atoms.
38. (Original) The medical device of claim 36 wherein each R<sup>4</sup> is H.
39. (Original) The medical device of claim 17 wherein the polymer is linear, branched, or crosslinked.
40. (Currently Amended) A segmented polymer comprising a soft segment comprising a group of the formula:



wherein:

n = 0 or 1;

m = 0 or 1;

p = 1-100,000;

r = 0-100,000;

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MEDICAL DEVICES, AND METHODS** $s = 1-100,000;$  $q = 1-100,000;$ 

$R^1$  and  $R^2$  are each independently a saturated or unsaturated aliphatic group, an aromatic group, or combinations thereof; ~~optionally including heteroatoms;~~

$Z$  is  $-C(R^3)_2-$  wherein each  $R^3$  is independently a saturated or unsaturated aliphatic group, an aromatic group, or combinations thereof; ~~optionally including heteroatoms,~~ wherein the two  $R^3$  groups within  $-C(R^3)_2-$  can be optionally joined to form a ring;

each  $R$  is independently a saturated or unsaturated aliphatic group, an aromatic group, or combinations thereof; ~~optionally including heteroatoms;~~ and

$V$  is  $[-O-Si(R)_2- \text{ or } ] R^1;$

with the proviso that the polymer is  $[[\text{substantially}]]$  free of carbonate linkages.

41. (Original) The polymer of claim 40 wherein  $p = 1-5000$ .
42. (Original) The polymer of claim 40 wherein  $p = 2-12$ .
43. (Original) The polymer of claim 40 wherein  $R^1$  and  $R^2$  are each independently a straight chain alkylene group, an arylene group, or combinations thereof.
44. (Original) The polymer of claim 43 wherein  $R^1$  and  $R^2$  are each independently a straight chain alkylene group.
45. (Original) The polymer of claim 40 wherein  $R^1$  and  $R^2$  are each independently groups containing 2 to 20 carbon atoms.
46. (Currently Amended) The polymer of claim 40 wherein each  $R^3$  is independently a straight chain alkyl group, an aryl group, or combinations thereof; ~~optionally including heteroatoms.~~

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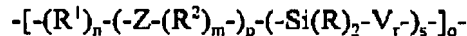
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47. (Currently Amended) The polymer of claim 46 wherein each  $R^3$  is independently a straight chain alkyl group, ~~optionally including heteroatoms.~~
48. (Original) The polymer of claim 47 wherein each  $R^3$  is independently a straight chain alkyl group containing 1 to 20 carbon atoms.
49. (Original) The polymer of claim 40 which is linear, branched, or crosslinked.
50. (Currently Amended) A segmented polymer comprising a urethane group, a urea group, or combinations thereof, and a soft segment comprising a group of the formula:



wherein:

 $n = 0$  or 1; $m = 0$  or 1; $p = 1-100,000$ ; $r = 0-100,000$ ; $s = 1-100,000$ ; $q = 1-100,000$ ;

$R^1$  and  $R^2$  are each independently a saturated or unsaturated aliphatic group, an aromatic group, or combinations thereof, ~~optionally including heteroatoms;~~

$Z$  is  $-C(R^3)_2-$  wherein each  $R^3$  is independently a saturated or unsaturated aliphatic group, an aromatic group, or combinations thereof, ~~optionally including heteroatoms,~~ wherein the two  $R^3$  groups within  $-C(R^3)_2-$  can be optionally joined to form a ring;

each  $R$  is independently a saturated or unsaturated aliphatic group, an aromatic group, or combinations thereof, ~~optionally including heteroatoms;~~ and

$V$  is  $[-O-Si(R)_2-$  or]  $R^1$ ;

with the proviso that the polymer is  $[[\text{substantially}]]$  free of carbonate linkages.



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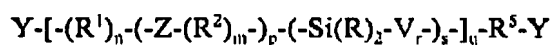
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51. (Original) The polymer of claim 50 wherein  $p = 1-100$ .
52. (Original) The polymer of claim 51 wherein  $p = 2-12$ .
53. (Original) The polymer of claim 50 which is a segmented polyurethane.
54. (Original) The polymer of claim 50 which is a biomaterial.
55. (Currently Amended) The polymer of claim 54 which is [[substantially]] free of ether, ester, and carbonate linkages.
56. (Original) The polymer of claim 50 which is linear, branched, or crosslinked.
57. (Previously presented) A segmented polymer comprising a soft segment prepared from a compound of the formula:



wherein:

each Y is independently OH or  $NR^4H$ ; $n = 0$  or  $1$ ; $m = 0$  or  $1$ ; $p = 1-100,000$ ; $r = 0-100,000$ ; $s = 1-100,000$ ; $q = 1-100,000$ ;

$R^1$ ,  $R^2$ , and  $R^5$  are each independently a saturated or unsaturated aliphatic group, an aromatic group, or combinations thereof, optionally including heteroatoms;

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Z is  $-C(R^3)_2-$  wherein each  $R^3$  is independently a saturated or unsaturated aliphatic group, an aromatic group, or combinations thereof, ~~optionally including heteroatoms~~, wherein the two  $R^3$  groups within  $-C(R^3)_2-$  can be optionally joined to form a ring;

each R is independently a saturated or unsaturated aliphatic group, an aromatic group, or combinations thereof, ~~optionally including heteroatoms~~;

each  $R^4$  is independently H or a saturated or unsaturated aliphatic group, an aromatic group, or combinations thereof; and

V is  $[-O-Si(R)_2-$  or]  $R^1$ ;

with the proviso that the polymer is  $[[\text{substantially}]]$  free of carbonate linkages.

58. (Original) The polymer of claim 57 wherein  $p = 1-100$ .
59. (Original) The polymer of claim 58 wherein  $p = 2-12$ .
60. (Original) The polymer of claim 57 wherein the number average molecular weight of the compound of the formula  $Y-[-(R^1)_n-(-Z-(R^2)_m)_p-(-Si(R)_2-V_r-)_q-R^3-Y]$  is no greater than about 100,000 grams/mole.
61. (Original) The polymer of claim 57 wherein  $R^1$  and  $R^2$  are each independently a straight chain alkylene group, an arylene group, or combinations thereof.
62. (Original) The polymer of claim 61 wherein  $R^1$  and  $R^2$  are each independently groups containing up to 100 carbon atoms.
63. (Original) The polymer of claim 62 wherein  $R^1$  and  $R^2$  are each independently groups containing up to 20 carbon atoms.

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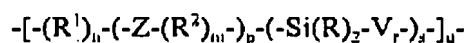
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64. (Original) The polymer of claim 63 wherein  $R^1$  and  $R^2$  are each independently groups containing 2 to 20 carbon atoms.
65. (Original) The polymer of claim 57 wherein each  $R^2$  includes at least two carbon atoms.
66. (Currently Amended) The polymer of claim 57 wherein each  $R^3$  is independently a straight chain alkyl group, an aryl group, or combinations thereof, ~~optionally including heteroatoms.~~
67. (Original) The polymer of claim 66 wherein each  $R^3$  is independently a straight chain alkyl group containing 1 to 20 carbon atoms.
68. (Original) The polymer of claim 57 wherein each Y is OH.
69. (Original) The polymer of claim 57 wherein each  $R^4$  is independently H or a straight chain alkyl group.
70. (Original) The polymer of claim 57 which is linear, branched, or crosslinked.
- 71-75. (Cancelled)
76. (Currently Amended) A method of making a segmented polymer comprising a soft segment comprising a group of the formula



the method comprising combining an organic compound containing two or more groups capable of reacting with hydroxyl or amine groups with a polymeric starting compound of the formula:

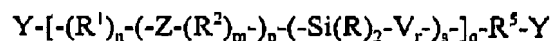
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wherein:

each Y is independently OH or NR<sup>4</sup>H;

n = 0 or 1;

m = 0 or 1;

p = 1-100,000;

r = 0-100,000;

s = 1-100,000;

q = 1-100,000;

R<sup>1</sup>, R<sup>2</sup>, and R<sup>5</sup> are each independently a saturated or unsaturated aliphatic group, an aromatic group, or combinations thereof; ~~optionally including heteroatoms;~~

Z is -C(R<sup>3</sup>)<sub>2</sub>- wherein each R<sup>3</sup> is independently a saturated or unsaturated aliphatic group, an aromatic group, or combinations thereof; ~~optionally including heteroatoms,~~ wherein the two R<sup>3</sup> groups within -C(R<sup>3</sup>)<sub>2</sub>- can be optionally joined to form a ring;

each R is independently a saturated or unsaturated aliphatic group, an aromatic group, or combinations thereof; ~~optionally including heteroatoms;~~

each R<sup>4</sup> is independently H or a saturated or unsaturated aliphatic group, an aromatic group, or combinations thereof; and

V is [[-O-Si(R)<sub>2</sub>- or]] R<sup>1</sup>;

with the proviso that the polymer is [[substantially]] free of carbonate linkages.

77. (Currently Amended) The method of claim 76 wherein the polymeric starting compound is prepared by a method comprising:

combining monomers of Formula II [[or]] and Formula III;

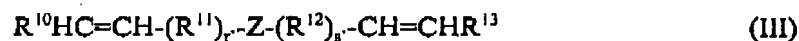
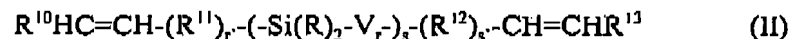
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wherein:

r, s, V, Z, and R are as defined [[above]] in claim 76;

r' = 0 or 1;

s' = 0 or 1;

R<sup>10</sup> and R<sup>13</sup> are each independently hydrogen or straight chain, branched, or cyclic alkyl groups containing up to 6 carbon atoms; andR<sup>11</sup> and R<sup>12</sup> are each independently a saturated aliphatic group, an aromatic group, or combinations thereof;with an alkene metathesis catalyst, ~~and optionally applying a vacuum~~

further wherein the method includes combining the monomers with a chain transfer agent before adding the alkene metathesis catalyst, or the method includes allowing the monomers to polymerize in the presence of the alkene metathesis catalyst prior to adding a chain transfer agent.